

A new species of *Tityus* C. L. Koch, 1836 (Scorpiones, Buthidae) in Colombia, with a check list and key to the Colombian species of the genus

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ABSTRACT

KEY WORDS

Scorpiones,
Buthidae,
Tityus otero n.sp.,
Darién,
Colombia,
new species,
check list,
taxonomic key.

Tityus otero n.sp. (Scorpiones, Buthidae) is described on the basis of five specimens (one male and four females), collected in the region of Darién in the north of Colombia. With the description of *Tityus otero*, the number of species of the genus *Tityus* known to be distributed in Colombia is raised to twenty. Some comments concerning the taxonomic position of the new species are added. A check list of Columbian species of *Tityus* as well as keys for their determination are also included.

RÉSUMÉ

Une nouvelle espèce du genre *Tityus* C. L. Koch, 1836 (Scorpiones, Buthidae) de Colombie, avec une liste complète et des clés pour les espèces colombiennes de ce genre. *Tityus otero* n.sp. (Scorpiones, Buthidae) est décrit à partir de cinq exemplaires (un mâle et quatre femelles), collectés dans la région de Darién au nord de la Colombie. Avec la description de *Tityus otero*, le nombre d'espèces appartenant au genre *Tityus*, connues pour la Colombie s'élève à vingt. Quelques commentaires sur la position taxonomique de la nouvelle espèce sont ajoutés. Sont également incluses une liste des espèces colombiennes de *Tityus*, ainsi que des clés pour leur détermination.

MOTS CLÉS

Scorpiones,
Buthidae,
Tityus otero n.sp.,
Darién,
Colombie,
nouvelle espèce,
« check list »,
clé taxonomique.

INTRODUCTION

The Colombian scorpion fauna has attracted the attention of arachnologists since the middle of the 19th century (e.g. Gervais 1844; Thorell 1876; Pocock 1893; Kraepelin 1912, 1914; Mello-Leitão 1945). Only since the 1980s, however, and especially during the last ten years has this fauna been studied intensively. Several new species have been added (Lourenço 1984a, b, 1991, 1993, 1994, 1995a, b; Lourenço & Florez 1989, 1990a, b, 1995). A more recent contribution by Lourenço (1997) represented the first attempt to produce a summary of this fauna associated with biogeographical considerations. It was admitted, however, that the results of this summary are tentative, and that a number of additional species should exist in Colombia. A much larger inventory will reveal a more realistic number of taxa present in the country. At present, a total of four families (Buthidae, Chactidae, Diploceridae and Ischnuridae), nine genera, and forty-one species has been confirmed for Colombia.

Recent study of old specimens collected in the region of Darién by F. Geay back in 1899 and deposited in the collections of the Muséum national d'Histoire naturelle, Paris, revealed one more new species of *Tityus* in Colombia. Moreover, because many people have been stung by scorpions in this country during the last few years, probably by species belonging to the genus *Tityus*, it seemed useful to present a check list and keys to the species known to be present in Colombia.

SYSTEMATICS

Genus *Tityus* C. L. Koch, 1836
Tityus oteroi n.sp.
 (Figs 1-3)

HOLOTYPE. — **Colombia.** Darién, 1899, F. Geay leg.: ♂, deposited in the MNHN, Paris (RS-0853).

ETYMOLOGY. — Patronym in honour of Dr. Rafael Otero Patiño of the Universidad de Antioquia, Colombia.

TABLE 1. — Measurements (in mm) of *Tityus oteroi* n.sp.

	Holotype ♂	Allotype ♀
Carapace:		
length	8.7	9.2
anterior width	6.8	7.2
posterior width	9.4	10.6
Metasoma, segment I:		
length	6.4	5.8
width	4.3	5.0
Metasoma, segment V:		
length	10.5	9.6
width	4.5	5.0
depth	4.4	4.3
Vesicle:		
width	3.6	3.6
depth	3.4	3.3
Femur:		
length	16.2	10.2
width	2.7	2.6
Tibia:		
length	16.3	10.8
width	3.2	3.7
Chelae:		
length	25.7	19.2
width	2.5	3.5
depth	2.5	3.6
Movable finger:		
length	15.2	12.6

MEASUREMENTS. — See Table 1.

DESCRIPTION OF MALE HOLOTYPE

Coloration

Base colour blackish-brown. Prosoma: carapace blackish-brown; coxosternal region yellowish-brown. Mesosoma: dorsum blackish-brown with two confluent yellowish lateral stripes. Venter yellowish-brown. Metasoma: segments I to IV blackish-brown; V darker, more blackish. Vesicle: reddish-black. Chelicerae yellowish-brown with a very dark thread; fingers dark. Pedipalps: palm reddish-yellow; fingers reddish-brown. Legs reddish-brown with diffuse fuscous spots.

Morphology

Carapace moderately granular; anterior margin

with a median concavity. Anterior median, superciliary, and posterior median keels moderate to strong. All furrows moderately deep. Median ocular tubercle distinctly anterior to centre of carapace. Eyes separated by more than one ocular diameter. Three pairs of lateral eyes. Sternum subtriangular. Mesosoma: tergites moderately granular. Median keel strong on all tergites; tergite VII pentacarinate. Venter: genital operculum divided longitudinally. Pectines: pectinal tooth count 20-21; basal middle lamellae of the pectines not dilated. Sternites smooth with elongate stigmata; sternite VII with four very feeble keels. Metasoma: segments I to IV with dorsolateral keels serrate and lateral supramedian keels crenulate. Dorsolateral keels on segments II to IV with numerous strongly spinoid granules (this character is diagnostic for the new species) (Fig. 1A). Lateral inframedian keels on segment I complete, strongly crenulate; on segments II and III represented by only two to three distal granules; absent on segment IV. Ventrolateral and ventral

submedian keels strong, crenulate. Intercarinal spaces moderately granular. Segment V with dorsolateral and lateromedian keels vestigial; ventrolateral and ventromedian keels strong, crenulate. Lateral intercarinal spaces moderately granular. Telson, feebly granular, almost smooth with a long and strongly curved aculeus. Dorsal surface smooth; ventral surface feebly granular; subaculear tooth moderate and spinoid. Cheliceral dentition characteristic of the family Buthidae (Vachon 1963); ventral aspect of both fingers and manus with long dense setae. Pedipalps: femur pentacarinate; tibia with six to seven keels; chelae with vestigial keels; all faces feebly granular, almost smooth. Movable fingers with 16-16 oblique rows of granules. Trichobothriotaxy: orthobothriotaxy A- α (Vachon 1973, 1975; Figs 2, 3). Legs: tarsus ventrally with numerous short fine setae.

DESCRIPTION OF ALLOTYPE AND PARATYPES

One allotype (female) and three paratypes

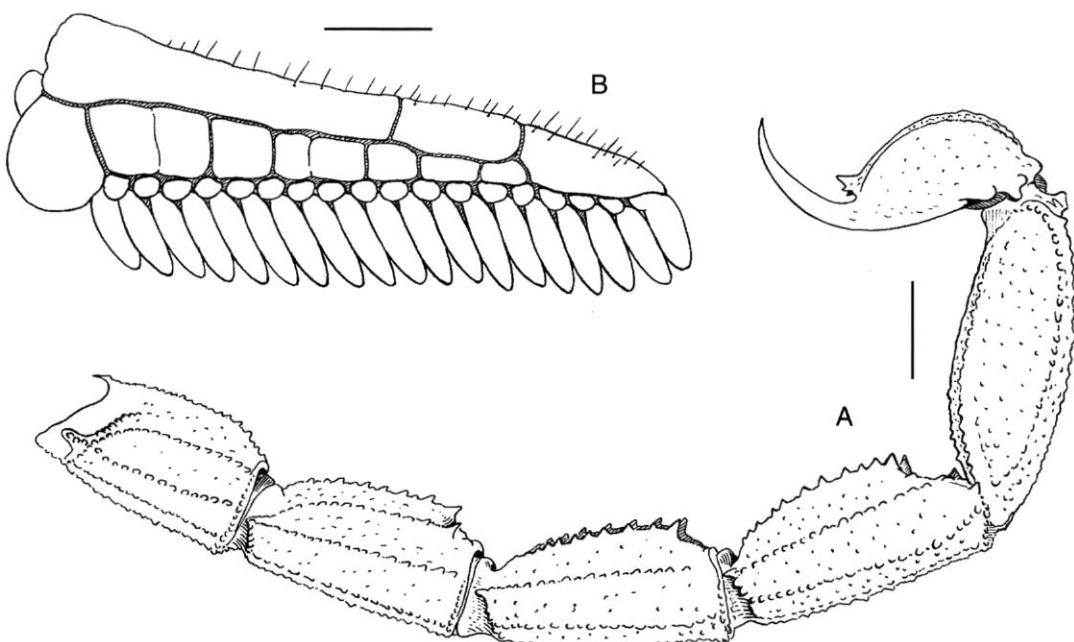


FIG. 1. — A, *Tityus otero* (♂ holotype); metasoma, lateral aspect, showing the carinal structure and the spinoid dorsal granules; B, *Tityus otero* (♀ allotype); pecten. Scale bars: A, 4 mm; B, 2 mm.

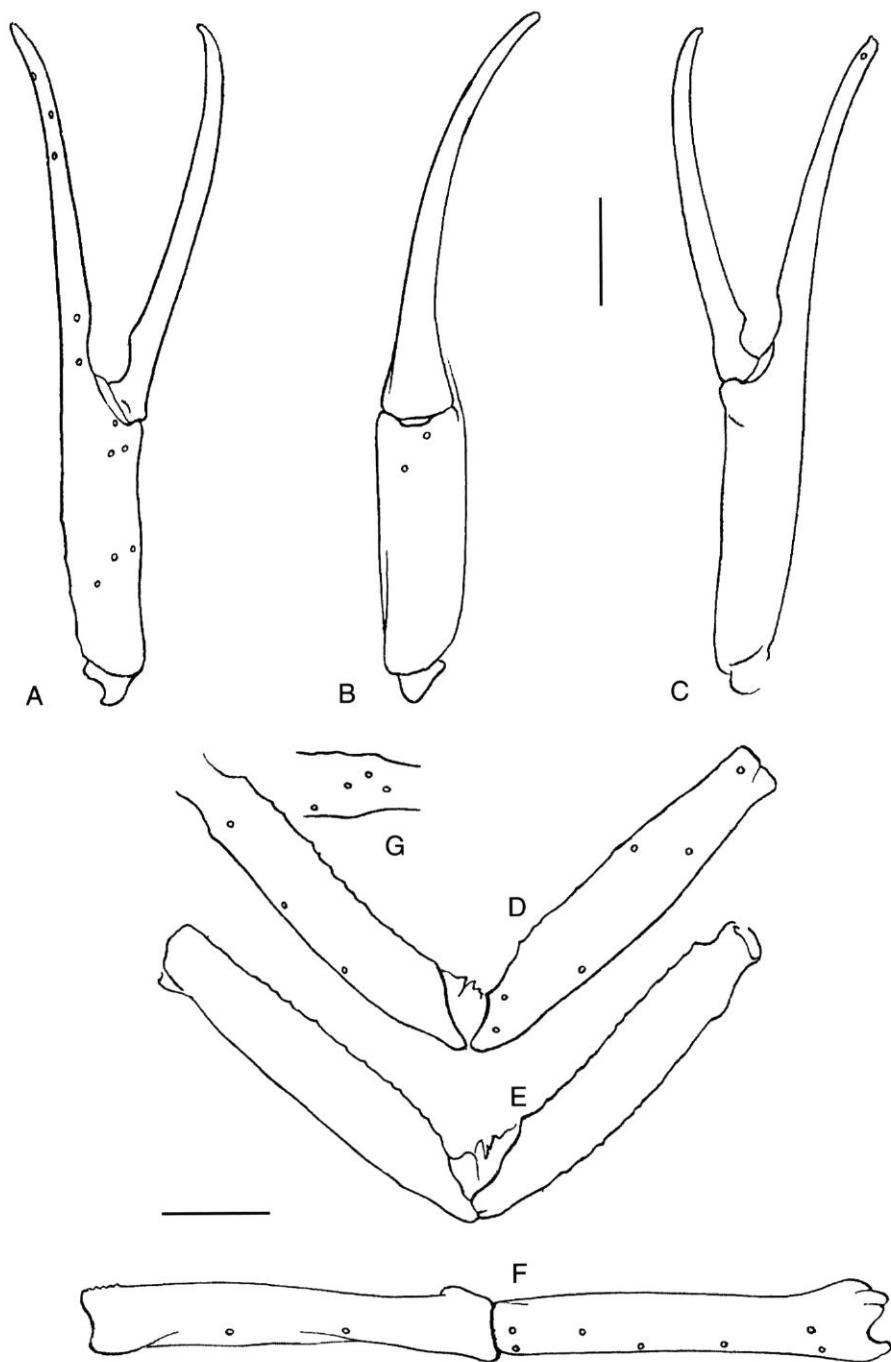


FIG. 2. — Trichobothrial pattern of *Tityus oteroí* (♂ holotype); A-C, chela, external, ventral and internal aspects; D-F, femur and tibia, dorsal, ventral and external aspects; G, detail of left pedipalp femur with dorsal trichobothria. Scale bars: 4 mm.

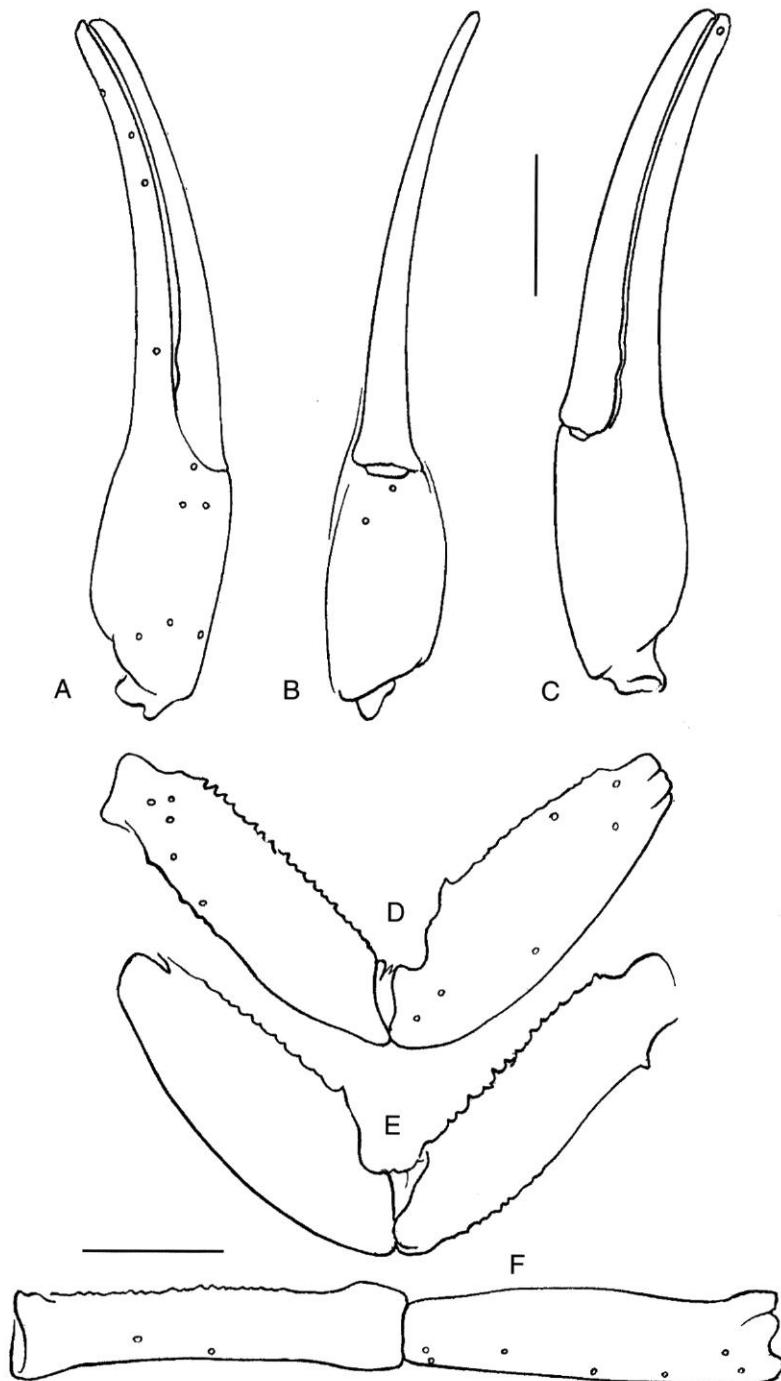


FIG. 3. — Trichobothrial pattern of *Tityus oteroi* (♀ allotype); A-C, chela, external, ventral and internal aspects; D-F, femur and tibia, dorsal, ventral and external aspects. Scale bars: 4 mm.

(females) with same data as for the holotype. Coloration similar to that of the holotype, only slightly darker. General morphology different to that of the holotype by mophometric values (see Table 1). Female pectines smaller, with 19-19 (allotype), 18-19, 19-20, 20-20 teeth; basal middle lamellae strongly dilated (Fig. 1B).

TAXONOMIC POSITION

The new species belongs to the "*Tityus asthenes*" group. It is closely associated with *Tityus nematochirus* Mello-Leitão, 1940; however, it can readily be distinguished from this last species by the presence of the strongly spinoid granules on the dorsal keels of metasomal segments II to IV. In *T. nematochirus* these keels are poorly carinated and the granules are round and smooth. It can be distinguished from *T. asthenes* Pocock, 1893 by having distinctly more elongated pedipalps (see taxonomic key).

CHECK LIST

Family BUTHIDAE Simon, 1880
Genus *Tityus* Koch, 1836

Species belonging to the "*Tityus clathratus*" group:

Tityus bastosi Lourenço, 1984
T. betschi Lourenço, 1992
T. columbianus (Thorell, 1876)
T. tayrona Lourenço, 1991

Species belonging to the "*Tityus bahiensis*" group:

Tityus blinci Lourenço, 1994
T. charalaensis Mello-Leitão, 1940
T. engelkei Pocock, 1902
T. lourençoi Florez, 1995
T. rebierei Lourenço, 1997

T. sabineae Lourenço, 1994
T. sastrei Lourenço et Florez, 1990

Species belonging to the "*Tityus asthenes*" group:

Tityus asthenes Pocock, 1893
T. cuellari Lourenço, 1994
T. festae Borelli, 1899
T. forcipula (Gervais, 1844)
T. fuhrmanni Kraepelin, 1914
T. macrochirus Pocock, 1897
T. nematochirus Mello-Leitão, 1940
T. oteroii n.sp.
T. pachyurus Pocock, 1897

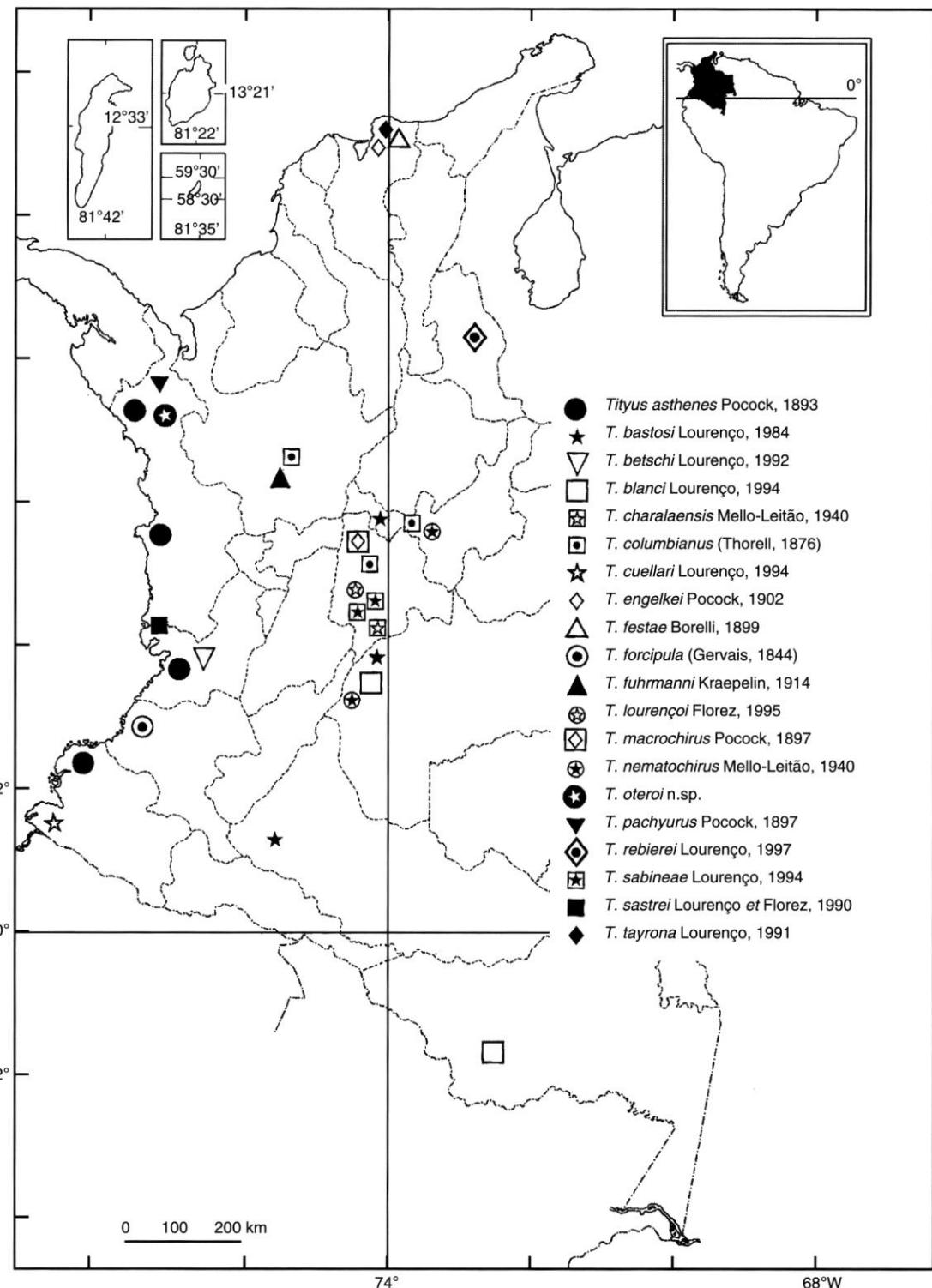
Total: 20 species (see also map Fig. 4).

DIAGNOSIS OF THE GENUS *Tityus* Koch, 1836 WITH KEYS TO THE SPECIES KNOWN FROM COLOMBIA

Scorpions of small, medium or large size ranging from 25 to 110 mm in total length. The general coloration can present almost all the colour patterns that are observed among scorpions in general, ranging from pale-yellowish or reddish-yellow to reddish-brown, dark-brown and blackish, and with dark spots which may be distributed in many different configurations. All segments are in general strongly granulated. Dentate margins of pedipalp-chela fingers composed of twelve to seventeen oblique rows of granules, but with supernumerary granules not present. Pectine teeth ranging in number from ten to thirty. Metasomal segments parallel in both males and females or elongated or enlarged posteriorly in males. Sexual dimorphism present in almost all species, and with several different patterns or configurations.

KEY TO THE THREE GROUPS OF *Tityus* PROPOSED IN THE CHECK LIST

1. Small species ranging from 25 to 40 mm in total length with variegated pigmentation and a rhomboidal subaculear tooth *Tityus clathratus* group
- Species of medium or large size, ranging from 50 to 100 mm in total length; pigmentation varying from yellowish to brown and black; subaculear tooth spinoid .. 2

FIG. 4. — Known distribution of the *Tityus* species in Colombia.

2. Species of medium size, ranging from 50 to 70 mm in total length; coloration rather pale varying from yellowish to reddish-brown or brownish, never black; often with conspicuous dark spots; basal middle lamellae of female pectines not dilated in almost all species *Tityus bahiensis* group
- Species of large size, ranging from 65 to 100 mm in total length; pigmentation bluish in the adult and yellowish/variegated in immature individuals; subaculear tooth always spinoid; basal middle lamellae of female pectines dilated in almost all species *Tityus asthenes* group

KEY TO THE SPECIES OF THE *Tityus clathratus* GROUP

1. Dorsolateral keels of metasomal segments I to IV without a spinoid posterior granule or with only a very feeble granule 2
- Dorsolateral keels of metasomal segments I to IV with a strong spinoid posterior granule; Amazonia *T. bastosi*
2. Subaculear tooth strong and very rhomboidal 3
- Subaculear tooth moderate and feebly rhomboidal *T. betschi*
3. Pectines with ten to fourteen teeth *T. columbianus*
- Pectines with fourteen to seventeen teeth *T. tayrona*

KEY TO THE SPECIES OF THE *Tityus bahiensis* GROUP

1. Ventral submedian keels of metasomal segments III and IV converging proximally to form a Y shape *T. rebierei*
- Ventral submedian keels of metasomal segments III and IV parallel through entire length 2
2. General coloration from yellowish to reddish-yellow 3
- General coloration from dark-reddish to blackish 5
3. Dorsolateral keels of metasomal segments II to IV with several granules modified as spines *T. blanci*
- Dorsolateral keels of metasomal segments II to IV without granules modified as spines 4
4. Basal middle lamellae of female pectines strongly dilated; dentate margins of pedipalp-chela fingers composed of thirteen to fourteen oblique rows of denticles *T. engelkei*

- Basal middle lamellae of female pectines not dilated; dentate margins of pedipalp-chela fingers composed of sixteen oblique rows of denticles *T. sastrei*
- 5. Male pedipalps slightly longer and more slender than those of females 6
 - Male pedipalps larger and more bulky than those of females *T. sabineae*
- 6. Pectines with sixteen to seventeen teeth; dentate margins of pedipalp-chela fingers composed of seventeen oblique rows of denticles *T. lourençoi*
- Pectines with fourteen teeth; dentate margins of pedipalp-chela fingers composed of twelve oblique rows of denticles *T. charalaensis*

KEY TO THE SPECIES OF THE *Tityus asthenes* GROUP

- 1. Male pedipalps longer and more slender than those of females 2
 - Male pedipalps larger and more bulky than those of females 4
- 2. Values of (male) femur, tibia and chelae length respectively 6/8, 8/10 and 10/13 times longer than width 3
 - Values of (male) femur, tibia and chelae length respectively 5, 3 and 5 times longer than width *T. asthenes*
- 3. Dorsolateral keels of metasomal segments I to IV with several strong spinoid posterior granules *T. oteroii*
 - Dorsolateral keels of metasomal segments I to IV without spinoid posterior granules *T. nematochirus*
- 4. Dorsolateral keels of metasomal segments I to IV with several strong spinoid posterior granules, or with one very strong spinoid posterior granule 5
 - Dorsolateral keels of metasomal segments I to IV with moderate or feeble spinoid posterior granules 7
- 5. One very strong spinoid posterior granule on dorsolateral keels of metasomal segments II to IV *T. fuhrmanni*
 - Several strong spinoid posterior granules on dorsolateral keels of metasomal segments I to IV 6
- 6. Adult size around 60 mm; legs and pedipalps blackish *T. forcipula*
 - Adult size around 45 mm; legs and pedipalps yellowish to reddish-yellow *T. cuellari*

7. Moderate spinoid posterior granules on dorsolateral keels of metasomal segments I to IV; male pedipalps larger and more bulky than those of females *T. pachyurus*
- Feeble spinoid posterior granules on dorsolateral keels of metasomal segments I to IV; male pedipalps only slightly larger and more bulky than those of females 8
8. Pectines with fifteen to sixteen teeth; dentate margins of pedipalp-chela fingers composed of fifteen oblique rows of denticles *T. macrochirus*
- Pectines with twenty-one to twenty-two teeth; dentate margins of pedipalp-chela fingers composed of sixteen oblique rows of denticles *T. festae*

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